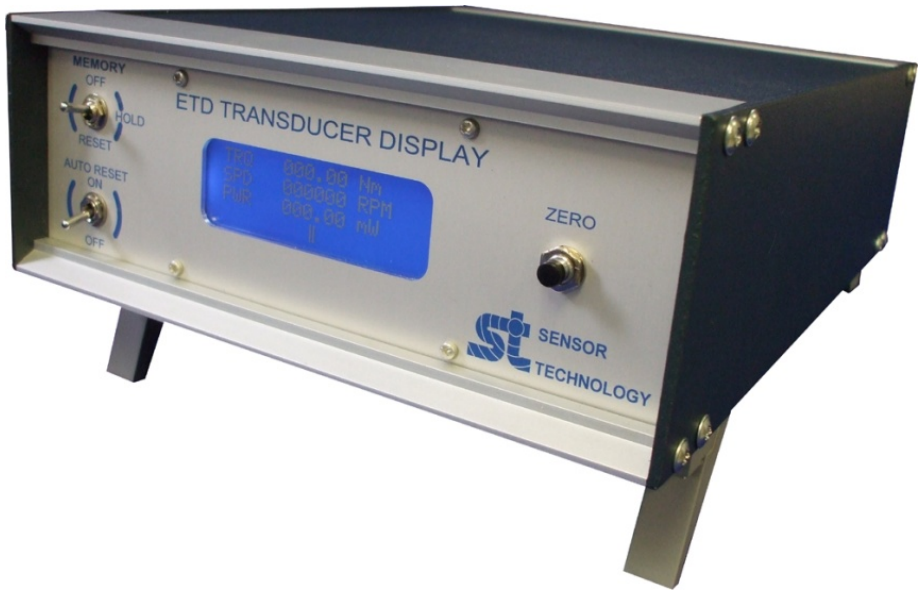
TORQSENSE®

TRANSDUCER DISPLAY ETD

USER MANUAL



CAUTION

This instruction manual should be read carefully and the safety instructions observed before installing or operating the equipment related to this manual.

SENSOR TECHNOLOGY LTD

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Patents
Sensor Technology Ltd's RWT series products are manufactured under one of the following US patents: 5,585,571; 6,237,417; 6,467,351; 6,765,493; 6,838,958; 6,864,759.

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Lifetime Warranty
Sensor Technology Ltd's standard range of torque measuring products are warranted against manufacturing defects and component failure for two years from date of purchase, subject to fair wear and tear and return for the first year's free of charge annual re-calibration. This warranty is extended indefinitely if the equipment is returned to Sensor Technology, or its distributor, for annual re-calibration, when software and hardware updates, if required, will be carried out free of charge. Standard range means those products as described in the company's product data sheets.

WEEE

This product may contain substances that can be hazardous to the environment if not disposed of properly. Electrical and electronic equipment should never be disposed of with general household waste but must be separately collected for their proper treatment and recovery. The crossed out bin symbol, placed on this product, is a reminder of the need to dispose of the product correctly at the end of its life and prevent the release of potential hazardous substances into the environment. In this way materials used in the product can be recovered, recycled or reused.

For users based in the EU, please contact Sensor Technology Ltd or your EU Distributor for information on collection arrangements for this product. Please recycle packaging where possible

Hazard Symbols

Symbol	Type of hazard
	Dangerous Voltage
	Static sensitive components

WARNINGS – Contain information to prevent damage to the equipment.
CAUTIONS – Contain information to prevent personal injury.

Retain the packaging the ETD was delivered in, should it need returning

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Operating Precautions

This product has been designed and tested to BS EN61010-1. To keep it in a safe condition and to avoid risk of injury, please observe the WARNING notices. To avoid damage to the equipment, observe the CAUTION notices.

WARNING – ELECTRICAL HAZARDS

⚠ **AC supply voltage**. This equipment must be earthed at all times. To maintain this protection the ETD must always be connected to a power source socket with earthing contact. Make sure the earthing is not interrupted if the supply is connected through an extension lead or other source.

Do not use the ETD if it is likely that its protection has been damaged or impaired.

Fuses. There is a supply fuse in the IEC inlet on the back panel of the ETD. Make sure that only fuses of the correct rating and type are used when replacing. Do not use mended fuses or short-circuited fuse holders.

⚠ **Do not remove or attempt to remove covers.** There are high voltages inside the ETD and there are no user serviceable parts inside.

WARNING – OTHER HAZARDS

Parts of the ETD are made from metal pressings and extrusions, therefore it should be handled with due care to avoid the risk of scratches or cuts.

CAUTION – LCD HANDLING

When using the ETD take care not to push on or knock into the front panel as this may cause damage to the LCD screen.

CAUTION – STATIC SENSITIVE COMPONENTS

⚠ The ETD contains static sensitive components. These may be damaged by handling the ETD. Please ensure you use caution when handling and where placing the equipment.

CAUTION

Excessive temperature may affect the ETD's performance. Make sure the ETD is not covered and avoid standing the ETD on or close to other equipment that is hot.

Only use Isopropyl alcohol to clean the exterior of the ETD.

Getting Started

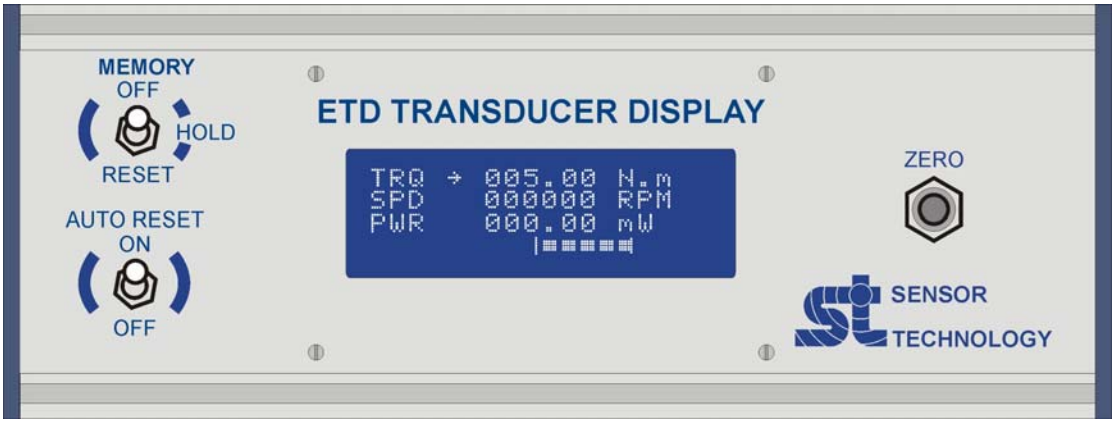
Introduction
The Transducer Display ETD is a readout suitable for all RWT transducers. Although it is primarily used to display torque and peak torque, it can also display speed and power, provide access to the analog outputs from the transducer and connect the transducer to a PC for use with TorqView and the Transducer Control Program.

Connecting a transducer
A digital lead (ACC4) must be connected between the transducer and the ETD for it to function correctly. Ensure the ETD is switched off before connecting the transducer to the ETD.

Powering the ETD
Power the ETD by plugging in an IEC lead and switch the 'ON/OFF' switch located on the back panel to 'ON'.

Operation

Front Panel
The front panel has a set of two switches associated with peak torque 'MEMORY' and a 'ZERO' switch.

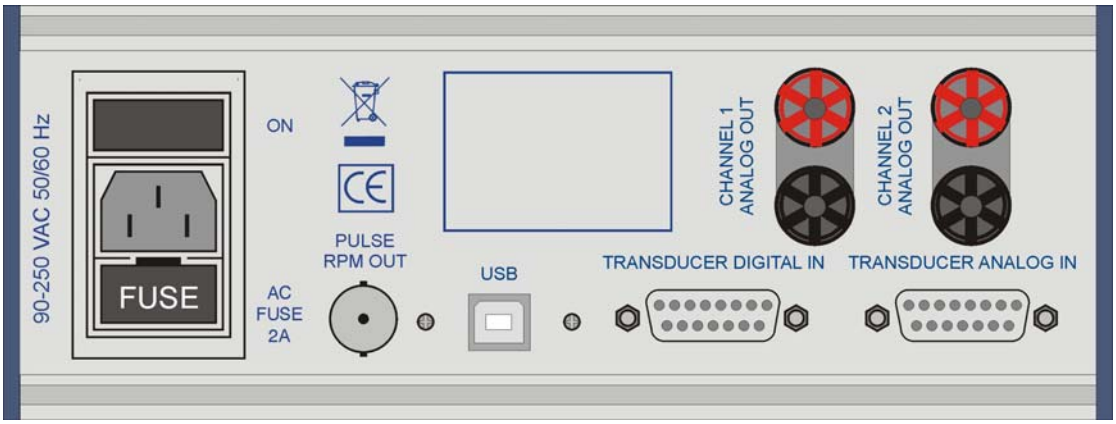


MEMORY Switch
This is a three-position switch with the following actions 'OFF', 'HOLD', 'RESET'. With 'OFF' selected the display will show the actual torque; with 'HOLD' selected the display will show the peak torque value; with 'RESET' selected the peak torque values will be reset to zero.

AUTO RESET Switch
This is a two-position switch with the following actions 'ON' and 'OFF'. With 'ON' selected the display will auto reset the peak torque value when the actual torque drops below a default setting of 80% of the peak torque value as long as the MEMORY switch is selected to 'HOLD'. This percentage default value can changed using the Transducer Control Program associated with the RWT 420/440 series transducers.

ZERO Push Button
This is a push button that zeros the transducer.

Back Panel
The back panel has Pulse RPM output, a set of two analog outputs, USB, and an analog input. The digital input is for connecting the transducer to the ETD.



Pulse RPM out.
TTL output 60 pulses per revolution.

USB
This connects the ETD and transducer to a PC for use with TorqView and the Transducer Control Program. For this feature to work the transducer must have the USB (Option G) fitted.

Transducer Digital In
This connects the transducer to the ETD display using a digital lead (ACC4).

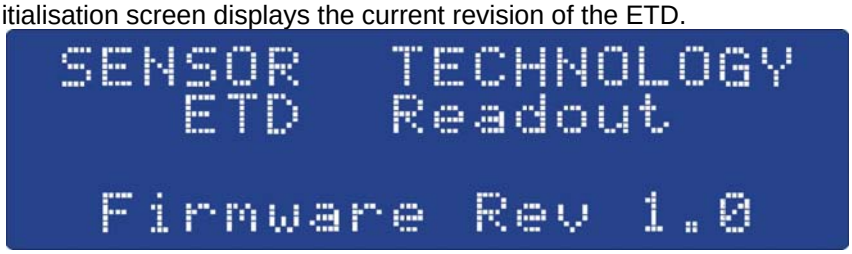
Transducer Analog In
This allows acess to analog outputs from the transducer. An analog lead (ACC3) is required.

Channel 1 Analog out
For RWT410/430 series transducers the analog output from the transducer is the output selected at purchase.
For RWT420/440 series transducers the analog output from the transducer is the output selected using the Transducer Control Program.

Channel 2 Analog out
For RWT410/430 series transducers the analog output from the transducer is the output selected at purchase.
For RWT420/440 series transducers the analog output from the transducer is the output selected using the Transducer Control Program.

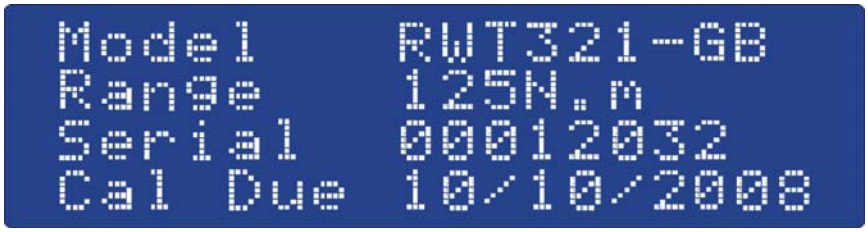
Initialisation Screens
With a transducer connected and the ETD switched on the following initialisation screens will be displayed:

This first initialisation screen displays the current revision of the ETD.



The “Detecting Sensor” screen will then be displayed when detecting a transducer and will remain until a transducer is detected. If this screen remains for a prolonged period then check the transducer is connected to the ETD correctly.

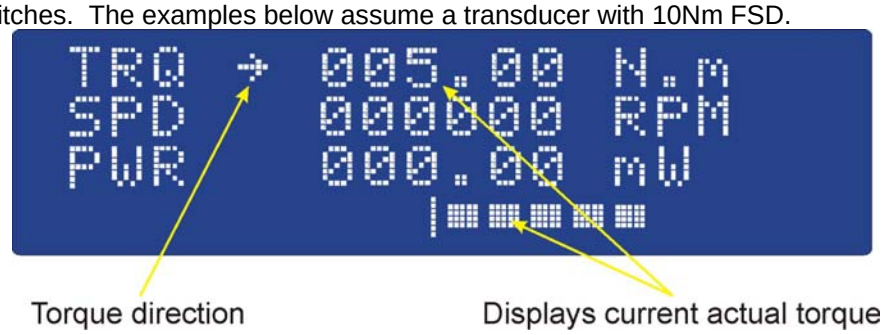
Once a transducer has been detected it will display the model, range, serial number and calibration due date of the transducer.



If at any time the transducer is disconnected from the ETD it will display the screen below and will remain until a transducer is detected.

Main Screens

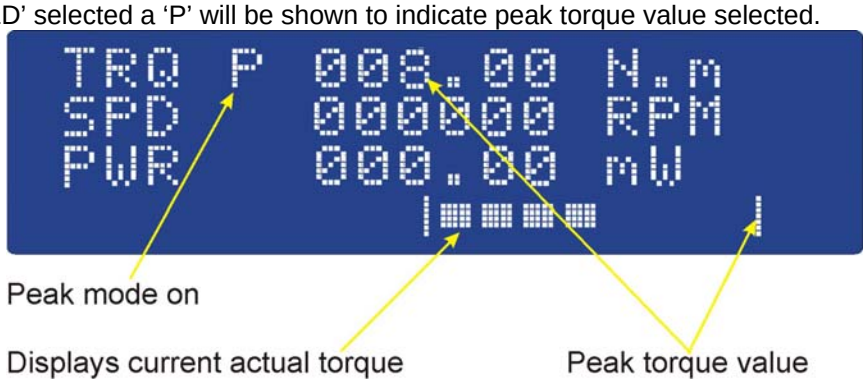
Once the ETD has initialised and is connected to a transducer it will display the main screen. What is displayed will vary depending on the transducer model, and the status of the front panel switches. The examples below assume a transducer with 10Nm FSD.



If the transducer does not have the speed option fitted then there will be no indication of speed or power.

The torque bar at the bottom of the display indicates the torque relevant to full scale (eg: with 5 Nm of torque applied the bar has increased to 50%.)

Peak Torque
With 'HOLD' selected a 'P' will be shown to indicate peak torque value selected.



The torque bar at the bottom of the display indicates actual torque (eg: with 8 Nm peak torque value the bar indicates 4 Nm of torque applied). Note also to the right hand side that peak value is marked with a line.

Warning Screens

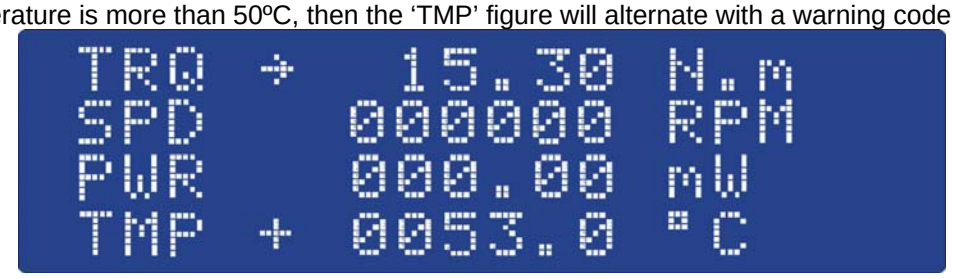
Warning Messages
Should the transducer experience one of the following types of warning; 'Analog Fault CH1', 'Analog Fault CH2', 'Zero Offset High', 'Exceeded Temp', 'Over torque', 'Critical over torque' then the bottom torque bar will be replaced with a warning message and a 6 digit warning code, where a '0' digit indicates no warning and a '1' digit indicates a warning.

For example, the Warning message sequence '00010' would indicate a warning for 'Over torque':

Warning	***0***	***0***	***0***	***0***	***1***	***0***
Type	*Analog Fault CH1*	*Analog Fault CH2*	*Zero Offset High*	*Exceeded Temp*	*Over torque*	*Critical over torque*
Reason and Action required	*In voltage output mode the analog pin is short circuit, in current output mode the analog output pin is open circuit. Check the analog connector wiring in Channel 1.*	*In voltage output mode the analog pin is short circuit, in current output mode the analog output pin is open circuit. Check the analog connector wiring in Channel 2.*	*There is a zero offset greater than 10% of the FSD. This can occur if the transducer has been zeroed when a high value torque was present.*	*Shaft temperature has exceeded normal operating conditions. Temperature compensation may no longer be effective or calibration valid.*	*Torque has been applied greater than the FSD.*	*Torque has been applied greater than 120% of the FSD.* *Contact factory if warning continues.*

Temperature Warning

If the operating temperature of the transducer reaches 45ºC or above (i.e. close to its maximum operating temperature) then the torque bar will alternate with a 'TMP' figure. If the temperature is more than 50ºC, then the 'TMP' figure will alternate with a warning code.



Error Message

Should the transducer experience a fault then an error message with an appropriate code will appear. This will remain for 10 seconds and then reconnect the transducer to attempt to clear the error. Should the error message continue for a prolonged period, then power cycle the transducer. Should this not clear then consult the factory or distributor and give details of the code.

Specification

Power Supply

Mains Input	90-250V AC 50/60Hz
Rated Voltage	110V / 240 Volts
Rated Power	10 Watts
Connector	Mains IEC
Fuse	2 Amp

Display

LCD Type	STN-Blue
Back light	Blue LED
Character Colour	White
Character Size	2.95 x 4.75 mm
Character Matrix	5 x 8 dots
No. of Characters	20 x 4 (Characters x Lines)
Viewing Area	76 x 25 mm
Update Rate	4 Hz

Controls

Mains Power	On / Off (On back panel)
Memory Mode	Off / Hold / Reset
Memory Auto-Reset	On / Off
Zero	Off / Momentary On

Accuracy

The Display accuracy is the rated accuracy of the connected transducer. The values are transmitted from the connected transducer digitally so the display electronics does not add any additional inaccuracies.

Units

The Engineering units of the measured values are the units specified when the connected transducer was ordered.

Resolution

The resolution is equal to the resolution of the connected transducer.

Connections

Mains Power	Mains IEC
Transducer Digital	15 pin D Type Female
Transducer Analog	15 pin D Type Male*
Pulse RPM Out	BNC Socket * 5V TTL Compatible
USB	USB Type B * USB option transducers only
Channel 1 Analog	4 mm Red / Black binding posts *
Channel 2 Analog	4 mm Red / Black binding posts *

* The signals are supplied directly from the connected transducer. The display picks up these signals from the D type Transducer connectors and breaks them out to the 4 mm binding posts, USB connector & RPM BNC. The specification of these signals are the specifications of the connected transducer.

Mechanical Data

Case Size (W x D x H)	220 x 290 x 100 mm

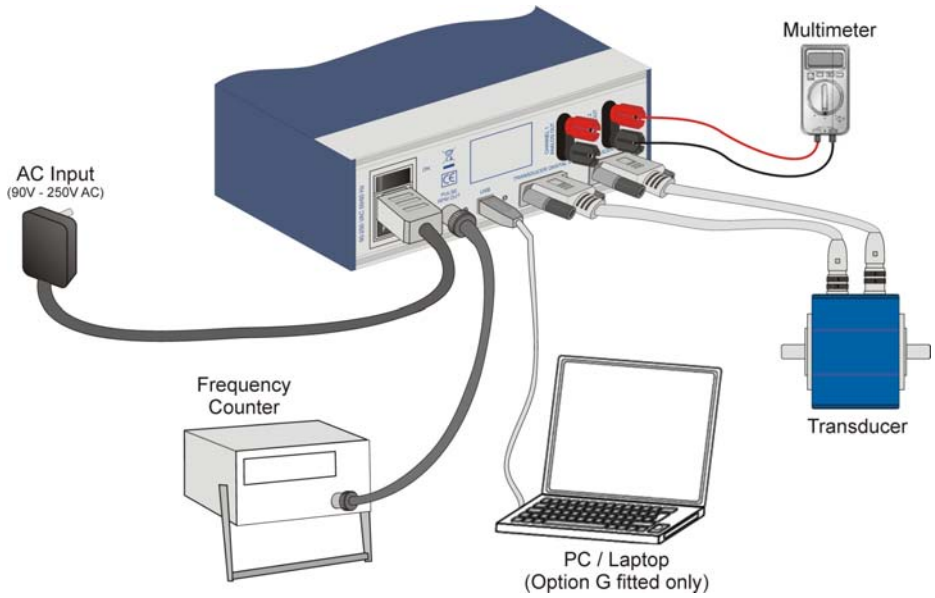
Temperature

Operating temperature	-10 - +50 Deg C

Standards & Approvals

LVD & Safety	EN61010-1:2001
EMC	EN61326-1:2006

Connection to other devices



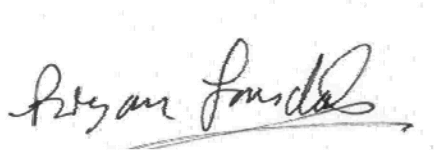
Declaration of Conformity

EC Directives

We, Sensor Technology Ltd, hereby declare that the products named below, to which this Declaration of Conformity relates, is in conformity to the requirements of EC Council Directives and Standards as listed:

- 2004/108/EC (Electromagnetic compatibility).
    - BS EN 61326-1:2006, (Electrical equipment for measurement, control and laboratory use).
- 2006/95/EC (Low voltage directive)
    - BS EN 61010-1:2001

Type of Product	Transducer Display Readout
Product Name(s)	Transducer Display ETD
Intended use:	Electronic display of the rotary torque of a connected transducer



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Managing Director
Sensor Technology Ltd

8th August 2008